

SCIENTIFIC GOALS

Background: Although medical ethicists have broadly investigated deep brain stimulation (DBS), there is a neglect in ELSI research with regard to ablative psychiatric neurosurgery (PNS) comprising thermal or radiofrequency ablation procedures, and radiosurgery (Gamma Knife).

Objective: The comprehensive investigation of ethical, legal, and societal issues of the whole field of contemporary psychiatric neurosurgery (PNS) using both normative and empirical methods.

Particular focus on techniques aiming at controlling brain functions situation-specifically, e.g., optogenetics, and closed-loop systems

Ethical issues:

- Differential ethical evaluation of different methods of PNS
- Ethical issues due to the possible influence of PNS on personality and capacity for autonomy
- Socio-ethical issues

Legal issues:

- recent legislation including International Law concerning psychiatric neurosurgery
- PNS in forensic contexts, e.g., for treating pedophilic child offenders or psychopaths

Societal issues:

- Investigation of reports in international media about PNS
- Focus Groups

Ablative psychiatric neurosurgery and DBS:

- decision-making of patients
- experiences of patients and their families after psychiatric neurosurgery, including personality changes and social adaptation processes

Development of recommendations

Recommendations for a justifiable development of psychiatric neurosurgery based on the ethical, legal, societal and clinical research results of the collaboration

CONSORTIUM

Germany, Berlin, Charité – Universitätsmedizin Berlin

- PD Dr. Sabine Müller (Coordinator)
- Merlin Bittlinger, M.A.

Germany, Bonn, Rheinische Friedrichs-Wilhelm-Universität

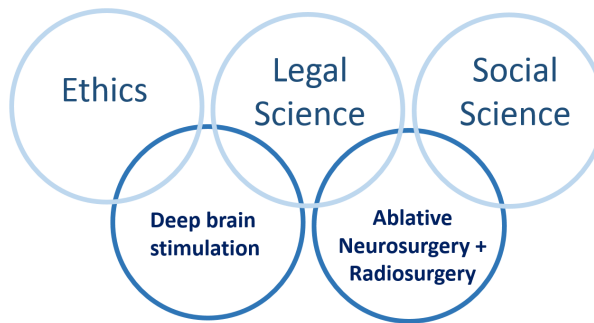
- Prof. Dr. Dr. Tade Matthias Spranger

Canada, Vancouver, University of British Columbia

- Prof. Dr. Judy Illes
- Dr. Laura Cabrera

Switzerland, University of Zurich

- PD Dr. Markus Christen



Spain, Madrid, Hospital Ruber Internacional

- Dr. Roberto Martínez-Álvarez

Belgium, Catholic University of Leuven

- Dr. Chris Bervoets
- Prof. Dr. Loes Gabriëls
- Dr. Simon Raymaekers

DIFFERENT PROFILES OF RISKS AND BENEFITS



| | Deep Brain Stimulation | Ablative Microsurgery | Radiosurgery (Gamma Knife) |
|---|---|--|--|
| Paradigm | Adjustability | Quick fix | Minimal-invasiveness |
| Adjustability | Very high | Low | Low |
| Addressing different targets in a single session | No | Yes | Yes |
| Reversibility | High | No | No |
| Invasive craniotomy | Yes | Yes | No |
| Onset of action | Hours to 12 months | Days or weeks | 6-12 months |
| Appropriateness for patients with special needs | No | Patients who would not comply with long-term follow-up | Patients who would not comply with long-term follow-up; with higher risks of anesthesia; with higher infection risks |
| Time and effort of the procedure | High | Medium | Low |
| Long-term treatment | Frequent consultation of specialists and regular OPs required | Not necessary | Not necessary |
| Costs | Very high direct and life-long costs | Medium | Low |
| Mortality risk | Yes | Yes | No |
| Short-term risks | - anesthesia - infection - hemorrhage - hardware complications | - anesthesia - infection - hemorrhage | - development of cysts - edemas |
| Long-term risks | - infection - hardware complications | No | No |
| Possible adverse effects | - Suicidality - Mood disturbance - Anxiety, panic attacks - Hypomania - Weight loss or gain - Long-lasting fatigue - Visual disturbance | - Suicidality - Headaches - Seizures - Drowsiness - Urinary incontinence - Cognitive impairment - Personality change | - Transient cognitive impairment - Transient apathy - Radiation dose >180 Gy: fatigue, weight gain, or apathy |
| Disadvantages in daily life | device-related problems (e.g., at airport controls) | No | No |
| Disadvantages for medical treatment | - exclusion of electroconvulsive therapy - special MRI required | No | No |
| Possible problems of psychosocial adaptation | Self-estrangement, feeling of being manipulated; burden of normality syndrome | Burden of normality syndrome | Improbable |